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Spectral and photometric studies of the polar USNO-A2.0 0825-18396733

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Abstract

© 2015, Pleiades Publishing, Ltd. Results of photometric and spectral studies of the new magnetic cataclysmic variable (polar) USNO-A2.0 0825-18396733 are presented. Photometric data in the B, V, and Rc filters show that this object exhibits a red excess of Rc − V = 1m. A red continuum with superposed strong single-peaked Balmer emission lines and HeII λ4686 Å emission, weak lines of neutral helium, and lines of heavy elements are observed in the object's spectra. Doppler maps constructed using the hydrogen and ionized-helium lines indicate that these lines form near the inner Lagrangian point, and that their formation is associated with an accretion stream. The spectra and radial-velocity curves indicate the eclipse of the white dwarf in the system to be partial. Radial-velocity curves derived for emission lines are used to estimate the component masses. The mass of the white dwarf is estimated to be 0.71–0.78M⊙, and the mass of the red dwarf to be 0.18–0.20M⊙.

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